

ABSTRACT

A large-heat-input butt-welded joint of welded structures prepared by butt-welding high-strength steel plates over 50 mm in thickness, having excellent brittle fracture resistance, is characterized by: (a1) the hardness of the weld metal is not more than 110% of the hardness of the base metal or (a2) the hardness of the weld metal is not less than 70% and not more than 110% of the hardness of the base metal, and, as required, (b) the width of the weld metal is not more than 70% of the plate thickness of the base metal, (c) the width of the region affected by welding whose hardness is softened to not more than 95% of the hardness of the non-heat-affected base metal has a width not less than 5 mm, and/or (d) the prior austenite grain size in the heat-affected zone (HAZ) contacting the welding fusion line is not more than 200 μm .